

Overload Protection Audio Analyzer

Capacitive Microphone Test Solution



Application: Electroacoustic Performance Testing of Capacitive Microphones

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1. Product Overview

The KingPo Overload Protection Audio Analyzer is a specialized electroacoustic testing system designed for fast and reliable performance evaluation of capacitive microphones. It features one-click automatic testing, built-in overload and short-circuit protection, and automatic report generation, making it ideal for high-volume production lines and quality control laboratories.

The system quickly measures key parameters such as frequency response, distortion (THD), sensitivity, and power curve, helping manufacturers ensure product consistency, identify defects early, and maintain high quality standards in microphone production.

2. Key Features

- **Ultra-Fast Testing Cycle** — Completes comprehensive parameter testing in approximately 3 seconds per microphone.
- **One-Click Automatic Operation** — Minimizes manual intervention, reduces operator workload, and significantly improves production efficiency.
- **Built-in Overload & Short-Circuit Protection** — Protects the analyzer and connected devices from damage caused by faulty microphones or incorrect connections, ensuring long-term reliability.
- **Comprehensive Electroacoustic Parameters** — Measures frequency response, total harmonic distortion (THD), sensitivity, power curve, and supports 1/6 octave analysis.
- **Automatic Report Generation & Traceability** — Automatically creates, stores, and exports detailed test reports, supporting quality traceability and data export to MES or quality systems.
- **Customizable Test Sequences & Limits** — Test sequences, pass/fail criteria, and report formats can be easily configured according to specific product requirements.
- **User-Friendly Interface** — Intuitive software interface allows operators to perform complex tests with minimal training.

3. Technical Specifications

Parameter	Specification	Notes
Test Time	Approximately 3 seconds per test	One-click automatic testing
Test Mode	One-click automatic testing	Reduces operator workload
Test Parameters	Frequency response, THD, sensitivity, power curve, 1/6 octave analysis	Comprehensive electroacoustic evaluation
Protection Function	Overload and short-circuit protection	Safeguards equipment and DUT
Report Function	Automatic generation, storage & export	Supports quality traceability & MES integration
Customization	Test sequences and pass/fail limits configurable	Flexible for different product specs
Power Curve Measurement	Obtained by gradually changing input sensitivity	Detailed performance profiling
Frequency Response Analysis	1/6 Octave Smooth analysis supported	High-resolution frequency domain evaluation

4. Testing Principle

The analyzer generates standardized test signals (such as swept sine or multi-tone signals) and measures the microphone's electrical output response. By comparing the known input signal with the actual output from the capacitive microphone, the system precisely calculates key electroacoustic parameters including frequency response, sensitivity, and total harmonic distortion (THD).

The built-in overload and short-circuit protection circuits continuously monitor the input and output signals, automatically protecting both the analyzer and the device under test (DUT) in case of abnormal conditions. This ensures safe, repeatable, and high-throughput testing in production environments.

5. Typical Test Items

- Frequency Response (with 1/6 octave smoothing)
- Total Harmonic Distortion (THD)
- Sensitivity
- Power Curve (by varying input sensitivity)
- Peak Factor / Abnormal Signal Detection

6. Typical Test Procedure

1. Connect the capacitive microphone to the test fixture or interface.
2. Select or load the appropriate test sequence for the microphone model.
3. Initiate the one-click automatic test.
4. The system performs the full test sequence (typically ~3 seconds) with real-time protection monitoring.
5. Review the automatic test report and pass/fail result on screen.
6. Export or save the report for traceability (optional integration with MES/QMS).

7. Applications

- Consumer Electronics — Microphones for smartphones, earphones, tablets, and wearables
- Automotive Electronics — Hands-free calling and voice control microphones
- Professional Audio Equipment — Conference systems and recording devices
- Quality Control & Incoming Inspection — Batch consistency verification
- R&D and Design Validation — Microphone performance optimization

8. Standard Configuration

The standard system typically includes:

- Main analyzer unit with overload/short-circuit protection circuits
- User-friendly software interface with customizable test sequences
- Test fixtures/interfaces suitable for capacitive microphones
- Automatic report generation and data export functions
- Basic operating manual and calibration guidelines

Note: Specific fixtures and software configurations may vary depending on microphone types. Please confirm requirements when ordering.

9. Ordering Information

To provide the most suitable configuration, please confirm the following information when requesting a quotation:

- Microphone types/models to be tested (e.g., specific capacitive microphone series)
- Required test parameters and any specific limits or standards
- Production volume / testing throughput requirements
- Need for integration with existing production line or MES/QMS systems
- Whether calibration certificate or on-site training is required
- Any special customization needs

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